

FIG. 1 ← RANK →

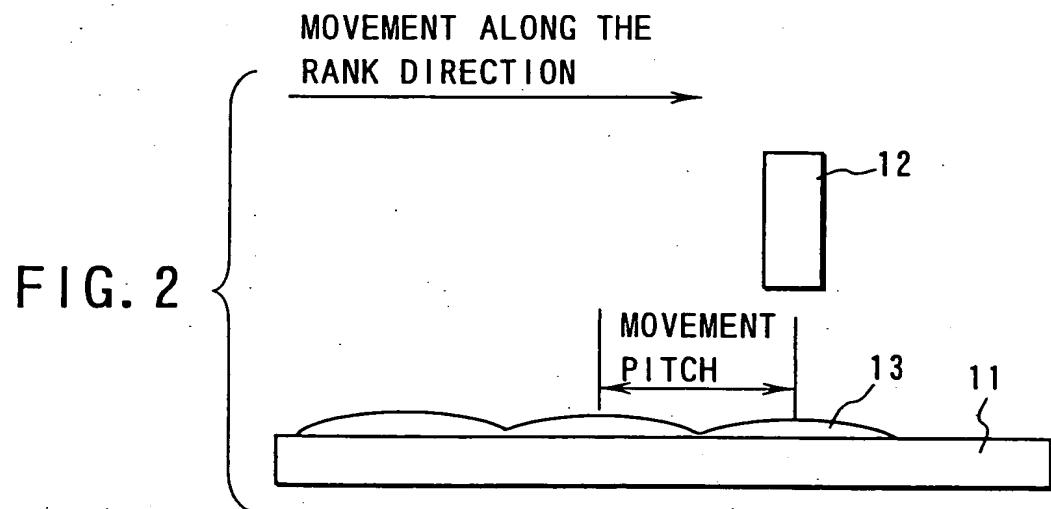


FIG. 2

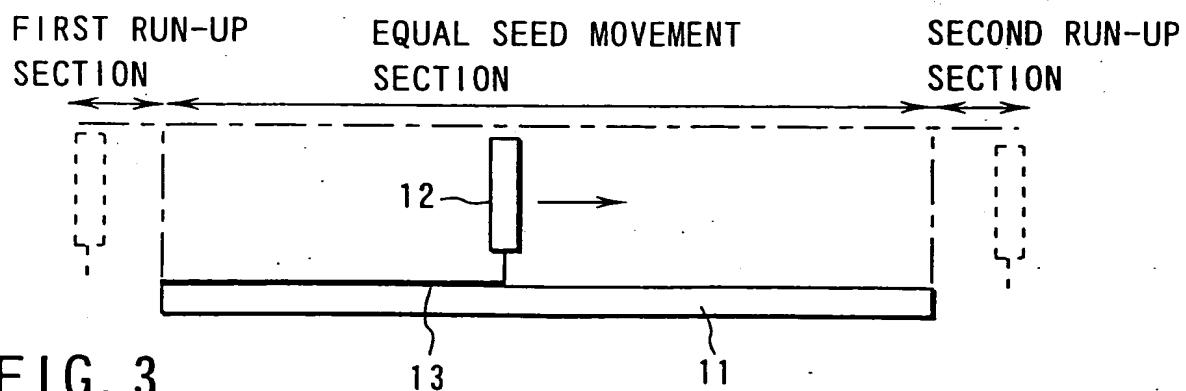
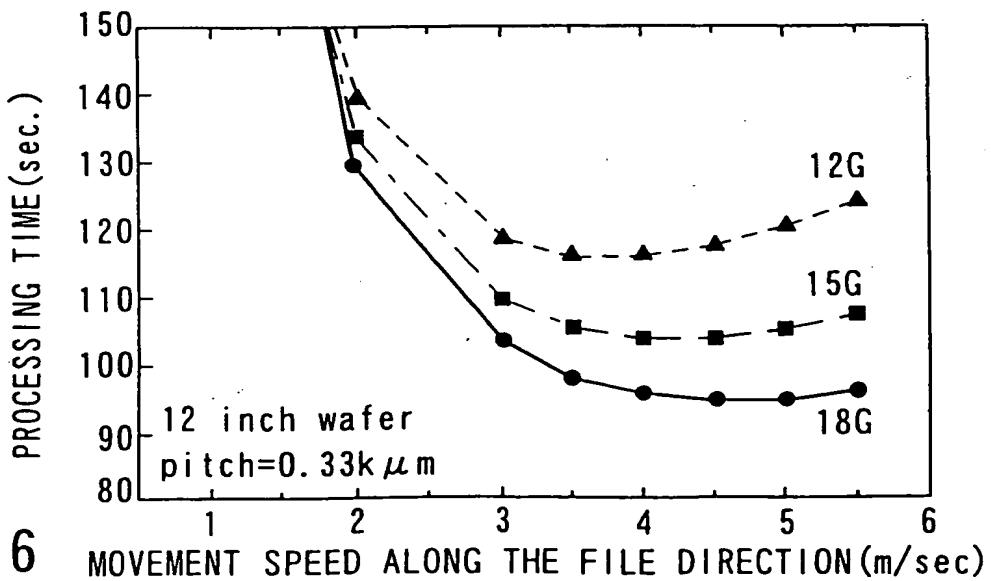
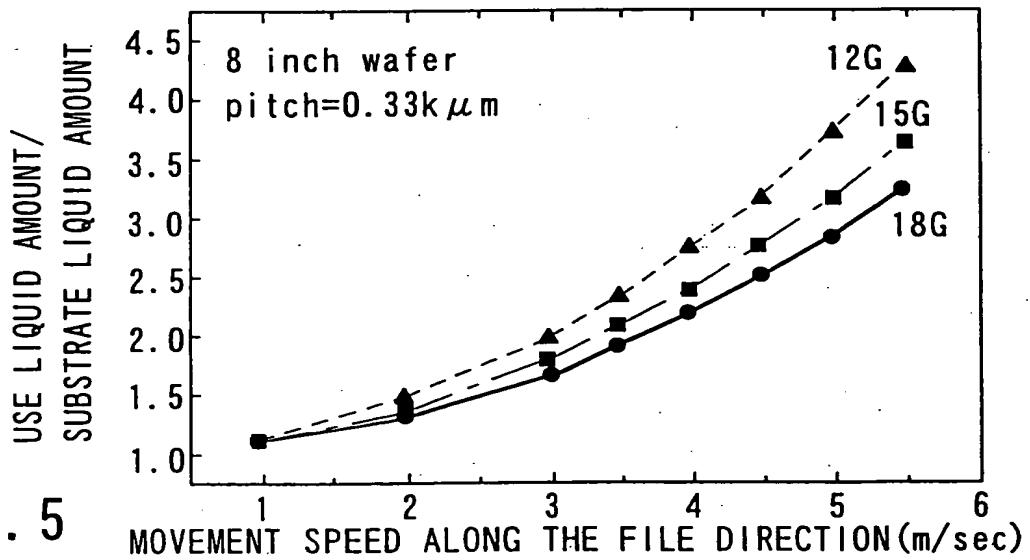
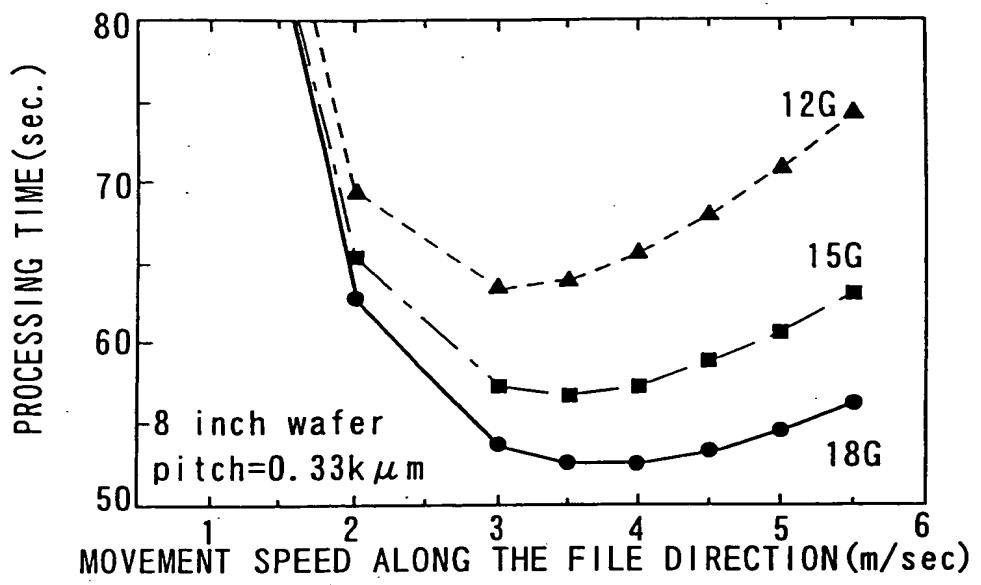


FIG. 3



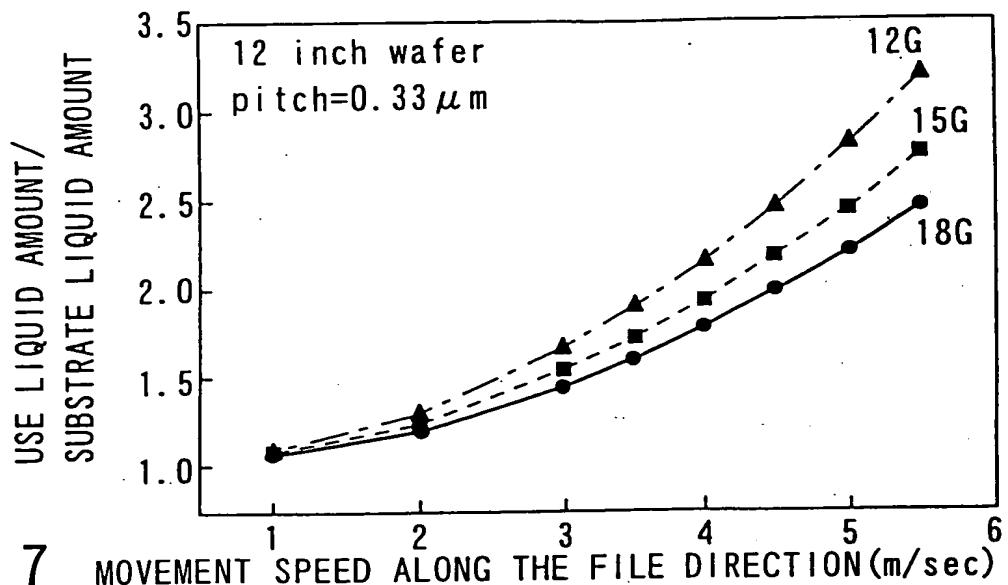


FIG. 7 MOVEMENT SPEED ALONG THE FILE DIRECTION (m/sec)

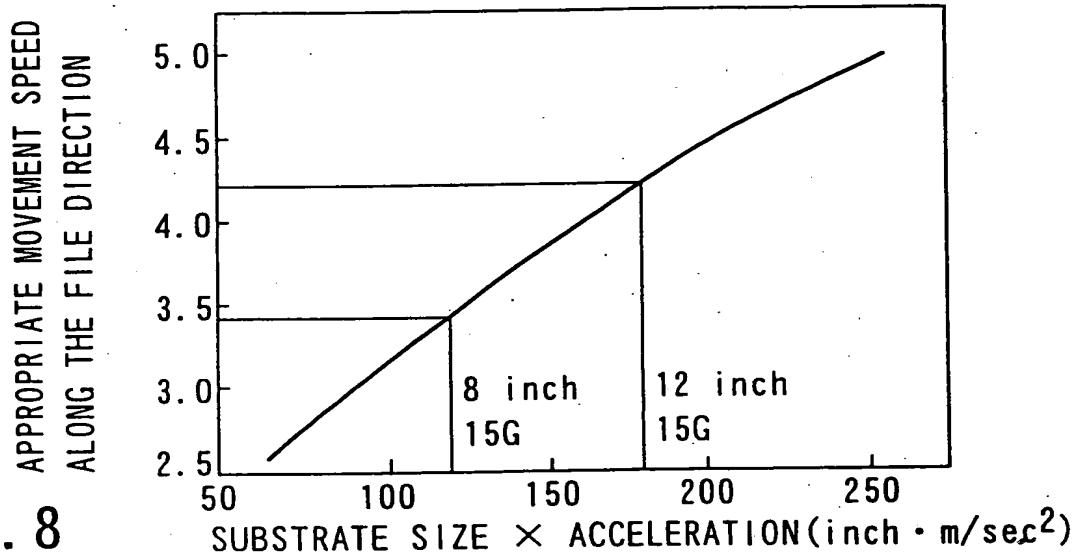


FIG. 8 APPROPRIATE MOVEMENT SPEED ALONG THE FILE DIRECTION

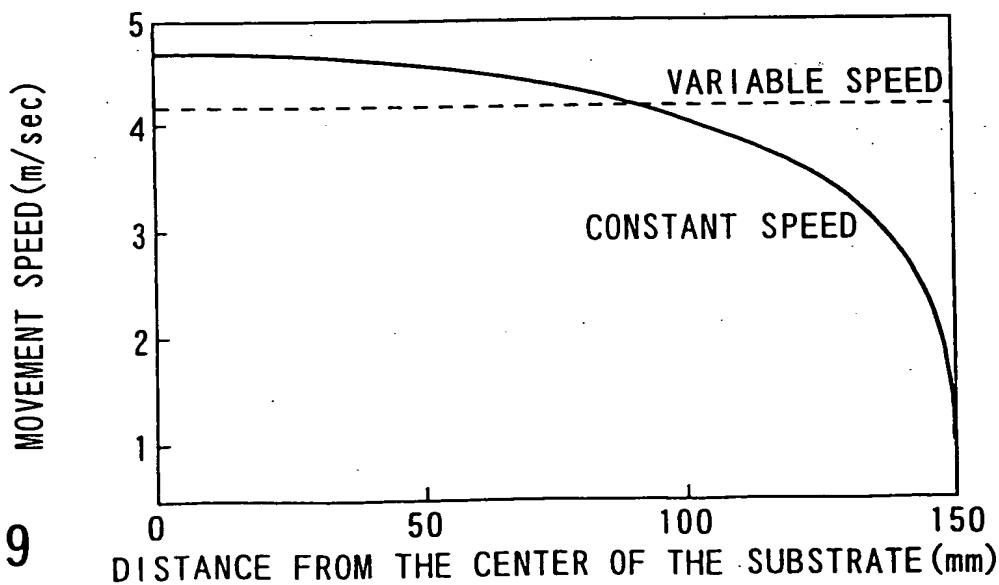


FIG. 9 MOVEMENT SPEED (m/sec)

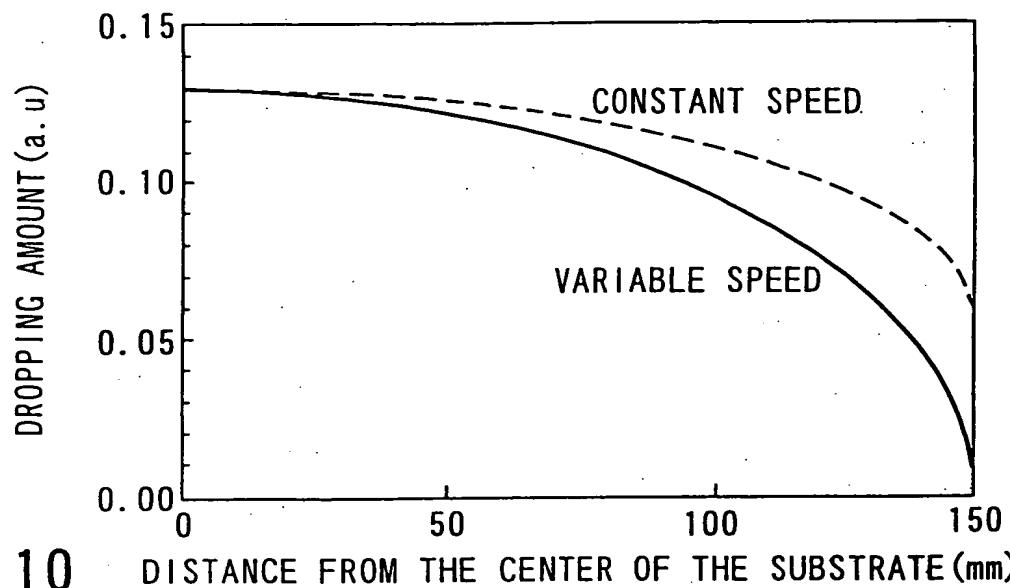


FIG. 10

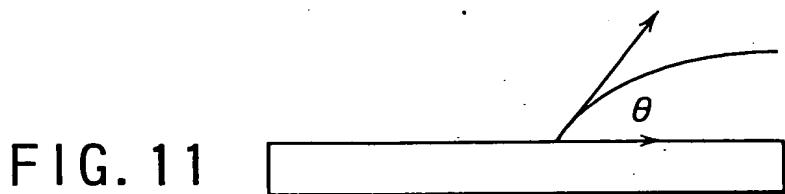


FIG. 11

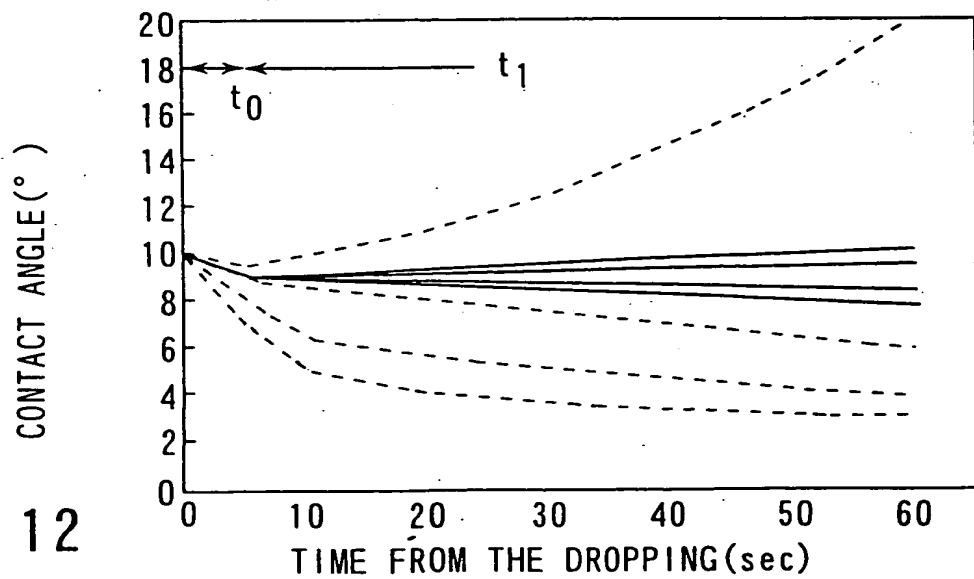


FIG. 12

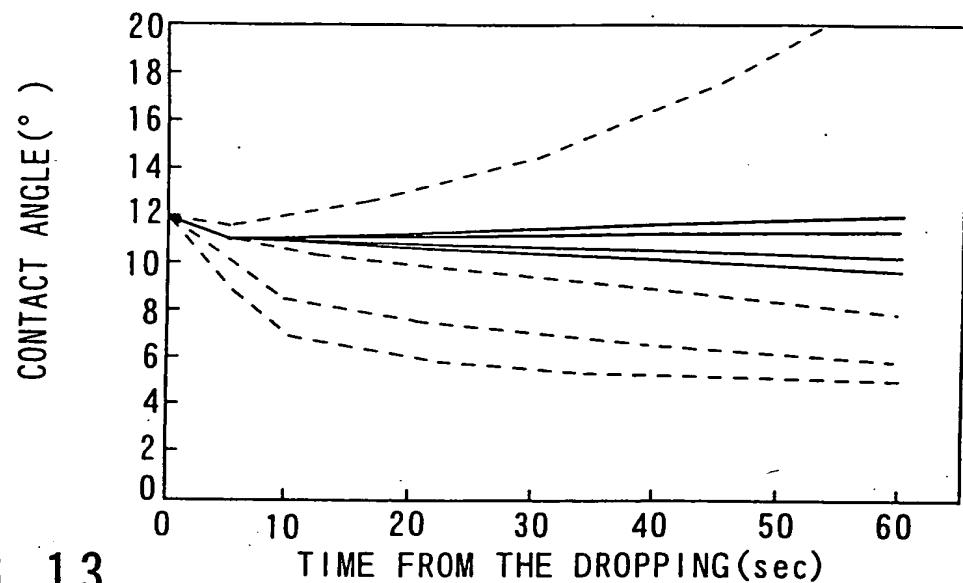


FIG. 13

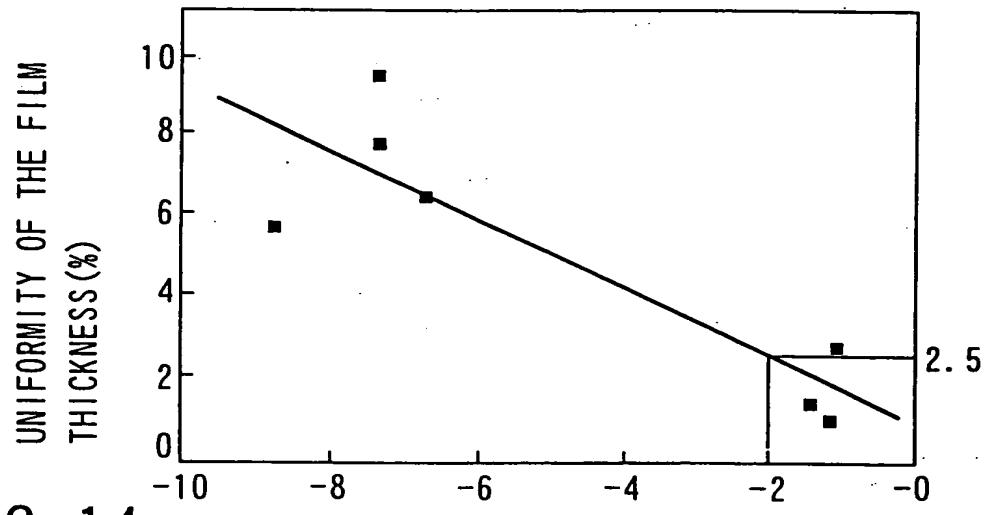
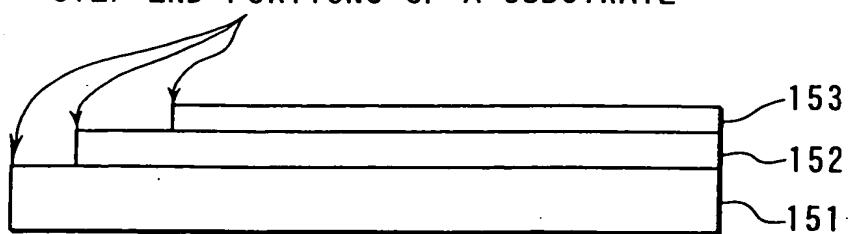
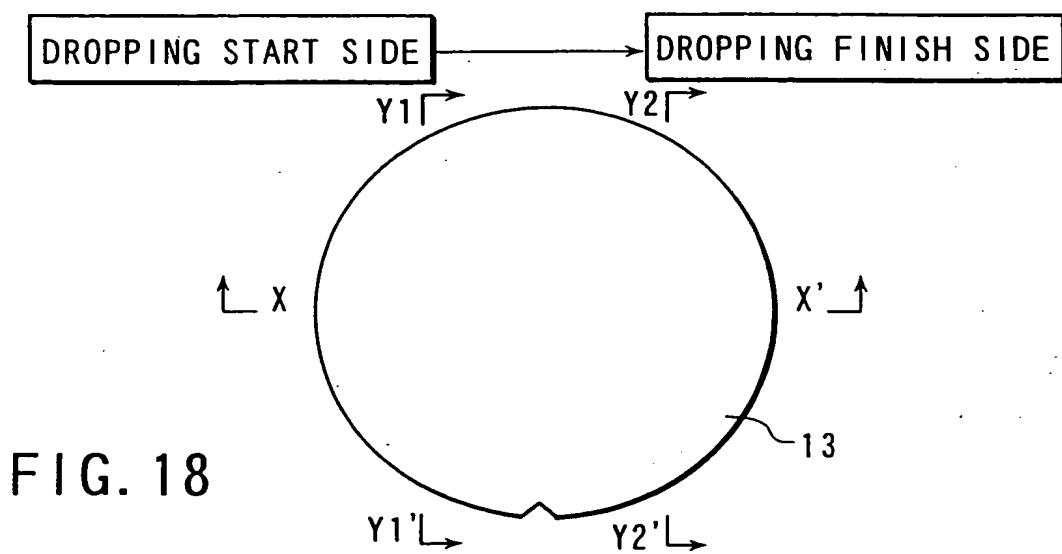
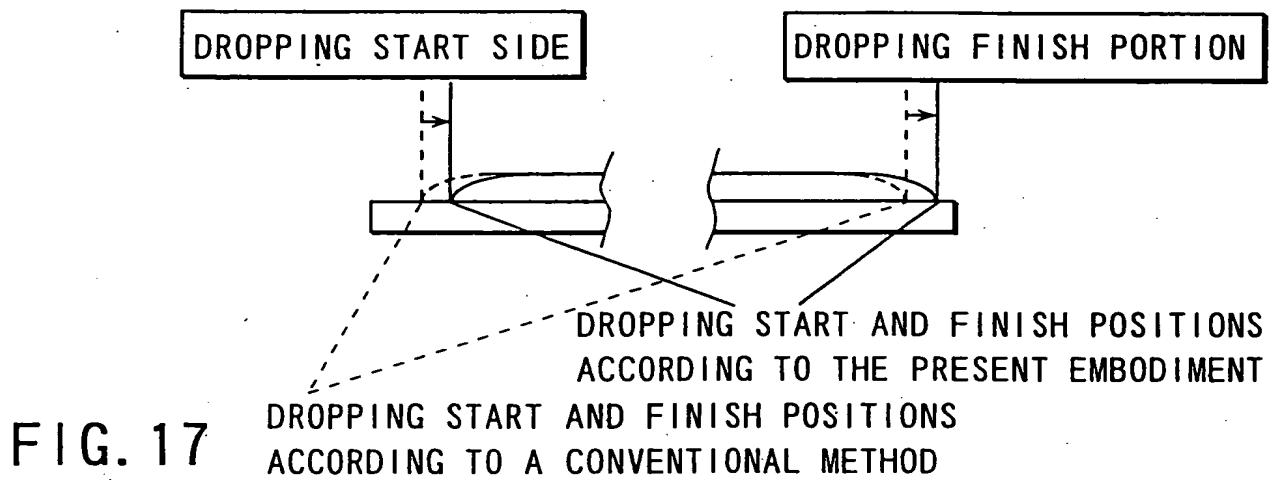
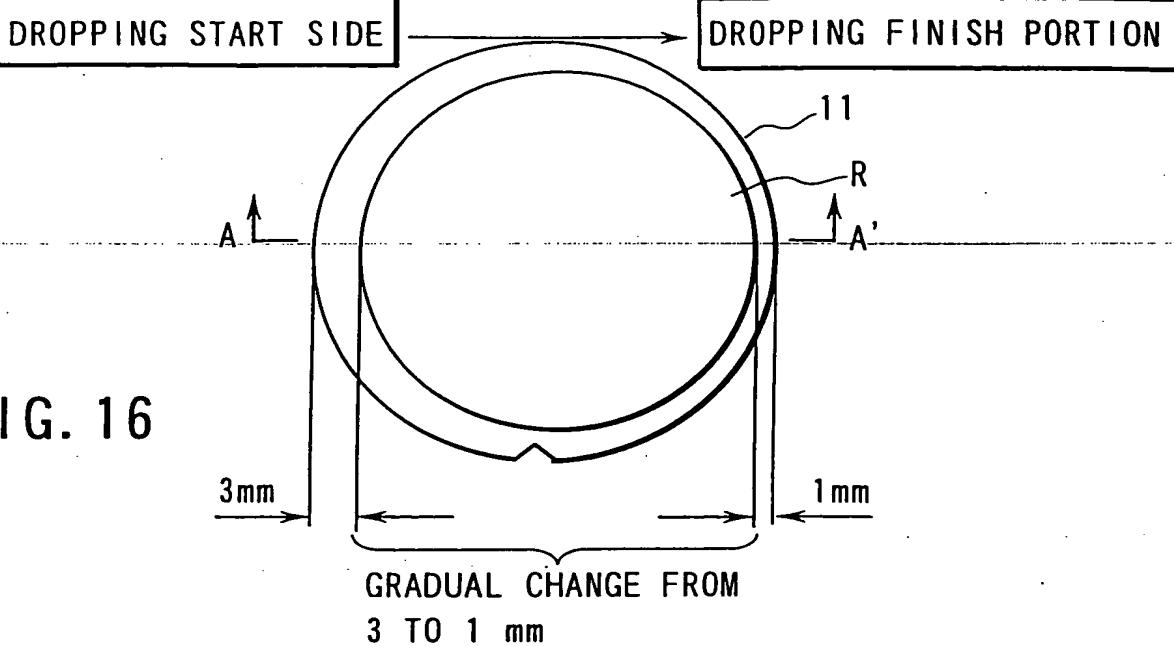


FIG. 14

STEP END PORTIONS OF A SUBSTRATE

FIG. 15





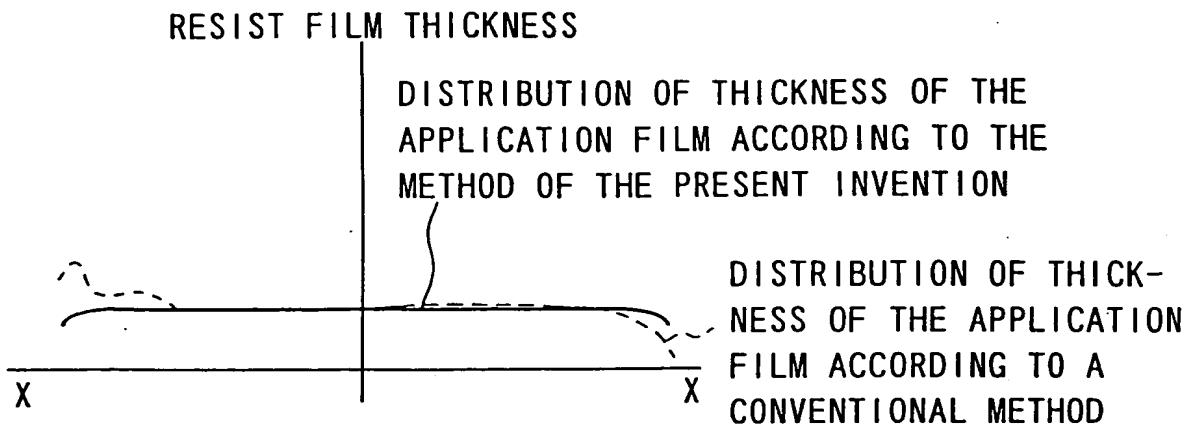


FIG. 19A

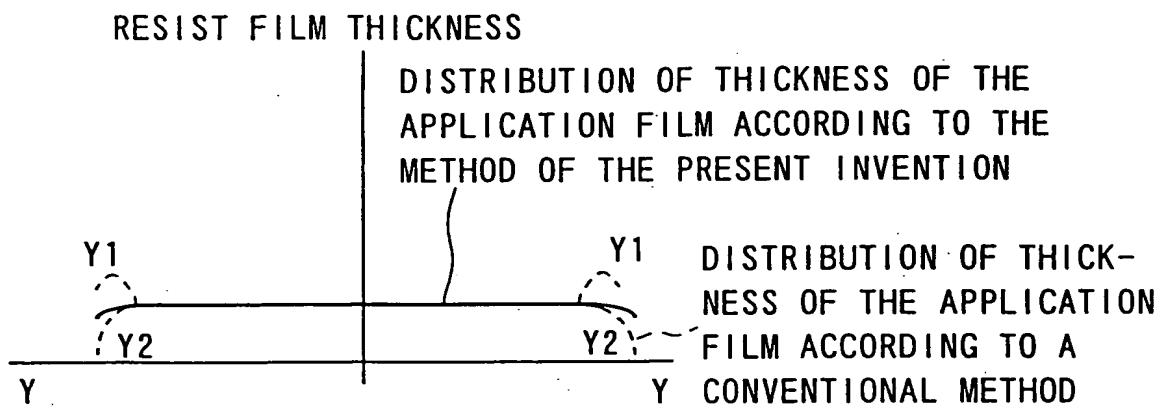
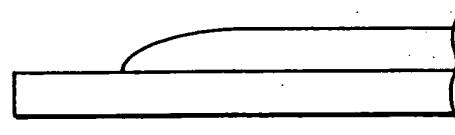


FIG. 19B

FIG. 20A



THE LIQUID IS STOPPED AT THE END OF THE SUBSTRATE, AND THE LIQUID SWELLS

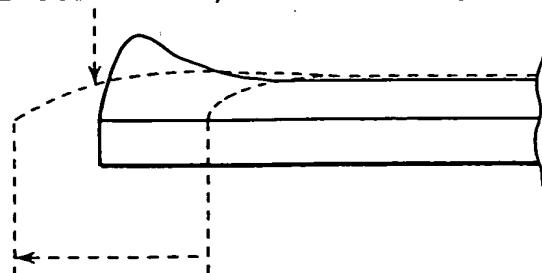


FIG. 20B
FLOWING DISTANCE IN THE CASE THAT THERE IS NO END OF THE SUBSTRATE

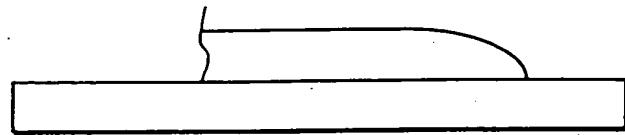


FIG. 21A

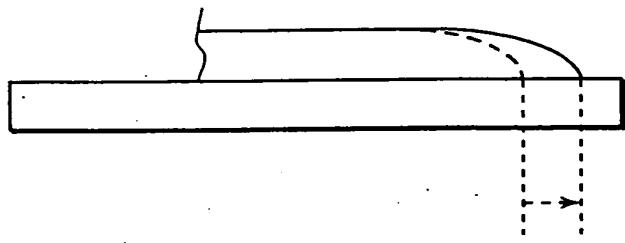
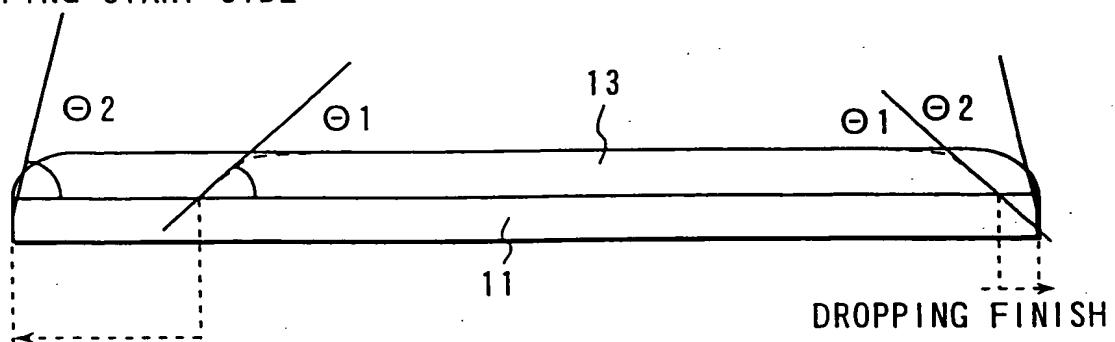


FIG. 21B

FLOWING DISTANCE

DROPPING START SIDE



THE CONTACT ANGLE RISES WHEN THE END
OF THE LIQUID FILM REACHED THE END
OF THE SUBSTRATE

FIG. 22

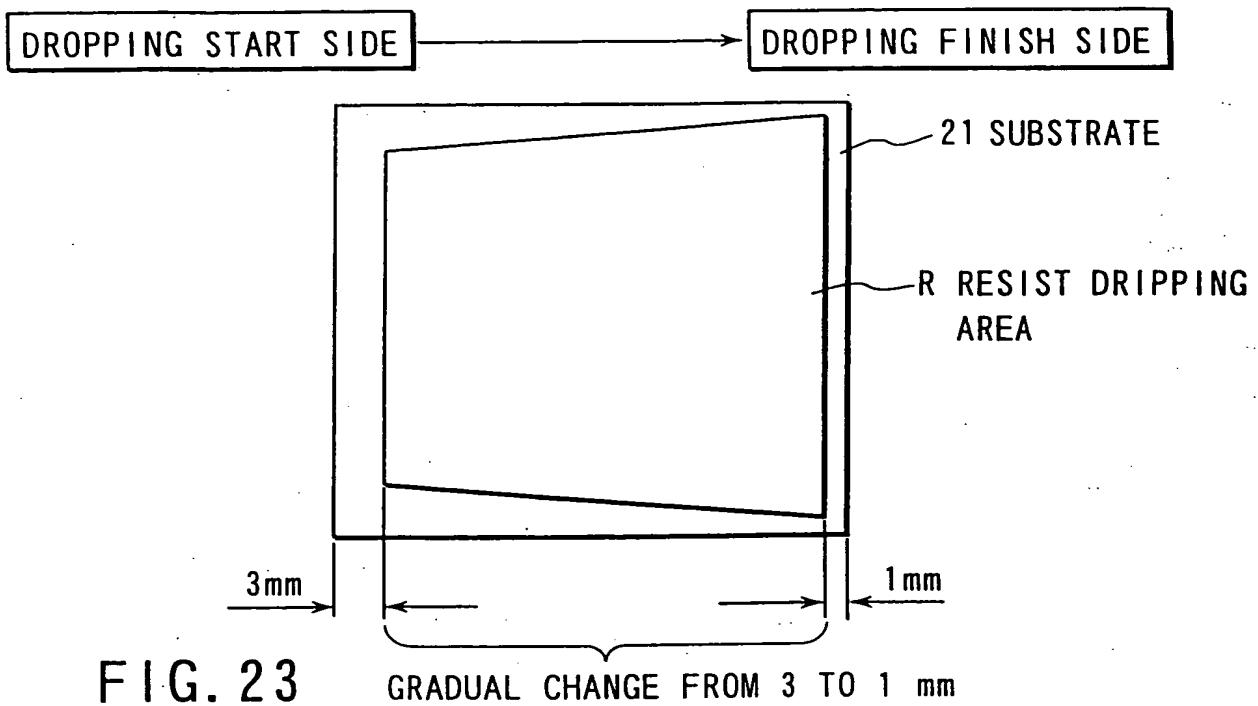


FIG. 23

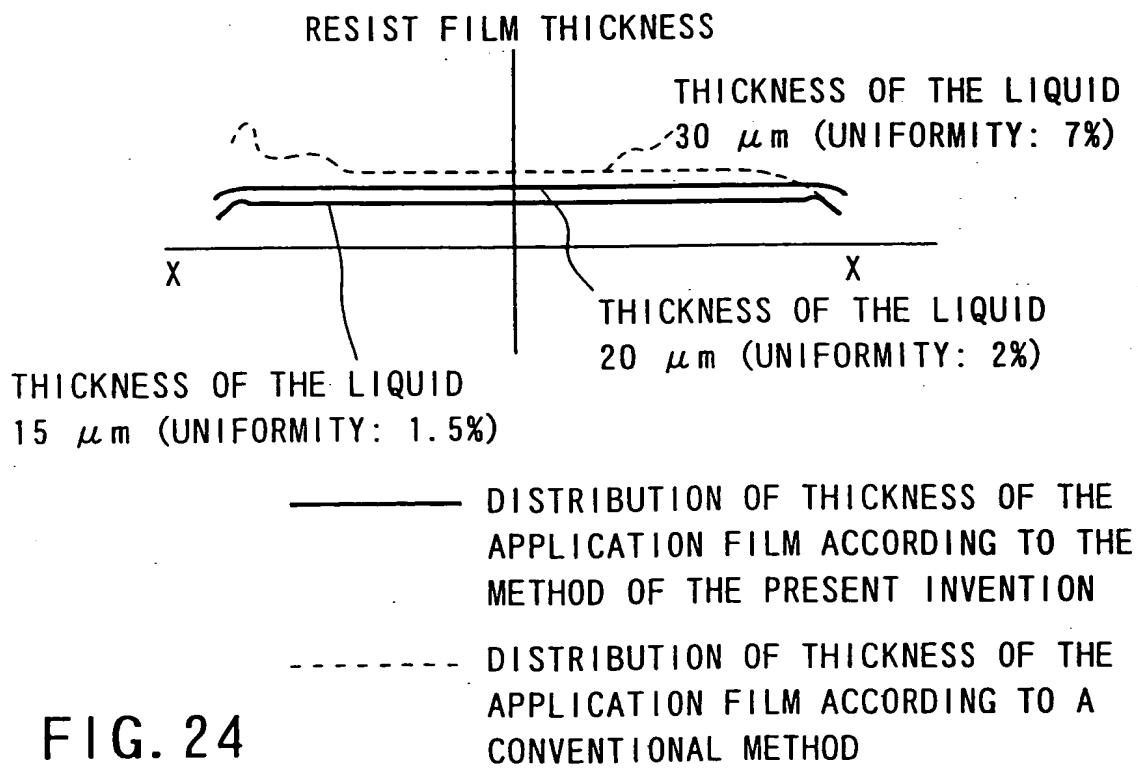
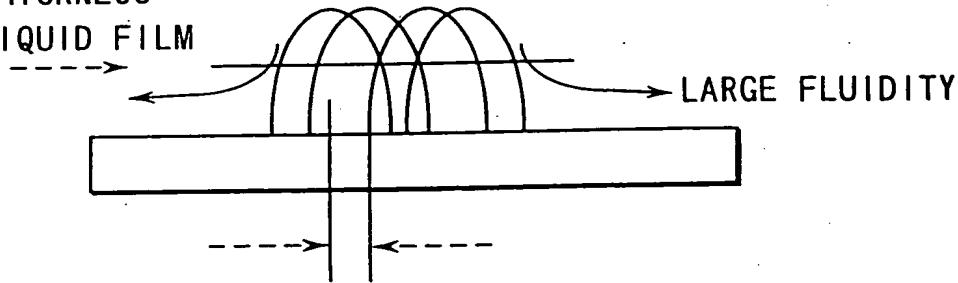


FIG. 24

TARGET THICKNESS
OF THE LIQUID FILM

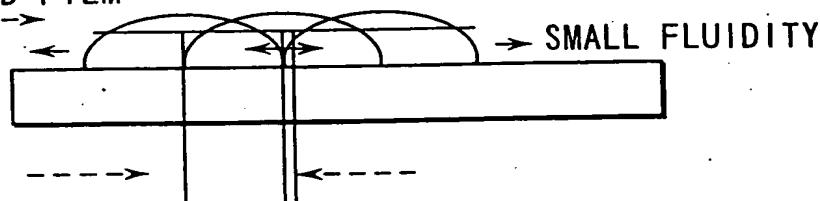


THE PITCH IS MADE SMALL
TO MAKE THE THICKNESS
OF THE LIQUID FILM LARGE

THE LIQUID
FILM FLOWS

FIG. 25A

TARGET THICKNESS
OF THE LIQUID FILM



THE PITCH IS MADE
LARGE TO MAKE THE
THICKNESS OF THE
LIQUID FILM SMALL

THE LIQUID FILM BALANCES
WITH INTERFACIAL TENSION
WITH THE SUBSTRATE SO
THAT THE FILM DOES NOT
MOVE

FIG. 25B